

THE

August, 1960

CHEMIST

VOLUME XXXVII

NUMBER 8



Dr. C. H. Fisher, FAIC (center)

Receives Honor Scroll of Louisiana AIC Chapter

At left, Dr. George W. Irving, Jr., speaker.

*At right, Dr. Winston R. de Monsabert, Chairman of the Chapter.
(See page 300)*

For the Award of the Honor Scroll of the New York Chapter to
Dr. C. G. Overberger, see page 293.

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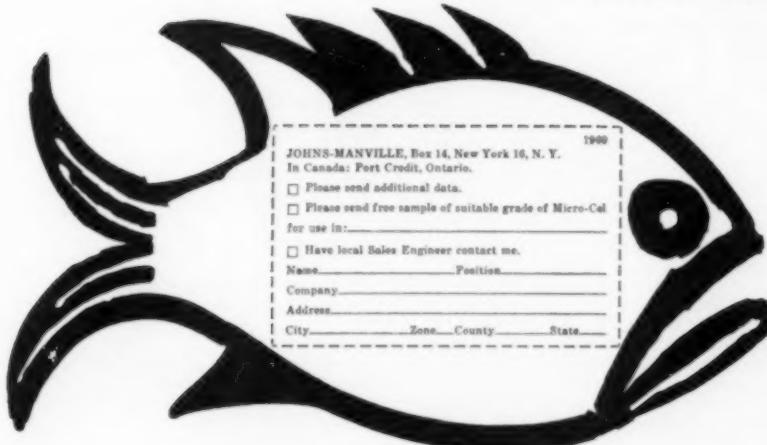
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THE AMERICAN INSTITUTE OF
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Deadlines for THE CHEMIST: For the September issue the deadline is August 15.

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THE AMERICAN INSTITUTE OF CHEMISTS does not necessarily endorse any of the facts or opinions advanced in articles which appear in THE CHEMIST.

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TO COME IN SEPTEMBER

Dr. W. S. Guthmann, F.A.I.C., of Morton Chemical Co., Chicago, Ill., will present, "A Chemical Executive Looks at Chemical and Chemical Engineering Education." One of the fine papers presented at our 37th Annual Meeting is now available: "Research on Research," by Bruce S. Old of Arthur D. Little, Inc., Cambridge, Mass.

Recommended Suppliers and Services

J. T. Baker Chemical Co.	The Lento Press	315
<i>Inside Front Cover</i>	Arthur D. Little, Inc.	300
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EDITORIAL

Committees Contribute to Professional Status

"The AIC is an organization with a great objective. Many of our members are doing much to advance the professional status of the chemist and the chemical engineer."—Dr. Ray P. Dinsmore, Hon. AIC

THE members of the professional committees of the AIC are among those who contribute effectively each year to professional advancement. Their recommendations on the professional matters presented to them and their recommendations of desirable activities for adoption by the National Council, render an effective and speedy means of action on professional subjects. The reports of our Committees for 1959-60, as presented at the 37th Annual Meeting, are excellent proof of Committee accomplishments.

Our Committees are small for the most part, and can therefore act quickly when necessary. Some of their work is never published, because it deals with individual situations, as in the case where a chemist is unjustly treated and appeals to a committee for aid. Since some of these occurrences are not the result of policy but derive from clashing personalities, the impersonal, understanding intervention by a committee may bring out the best side of both individuals with a fair settlement.

Every AIC member is encouraged to contribute his knowledge in a special field to any Committee on that subject. Committees welcome "consultants" in special subjects. Those

not specialists can watch State and local legislation pertaining to chemists and report it to our Committee on Legislation.

Every AIC member is encouraged to consult committees about his or her problems of a professional nature. Specifically, our Committee on Employer-Employee Relations is particularly adept in handling problems of this type. The Committee on Manpower should be queried about current fields of opportunity, employment qualifications, sources of salary information, etc. Matters involving ethics go to the Committee on Ethics; those involving the practice of clinical chemistry, to the Committee on Clinical Chemistry. The addresses of Committee chairmen are given below to facilitate contacts with our Committees.

AIC Committees 1960-61

At the June meeting of the National Council, President Harris announced the appointment of the following Committees to serve for the 1960-61 fiscal year:

Central Planning Committee

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674 Shackamaxon Drive,
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Dr. J. A. Bjorksten
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COMMITTEES . . .

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Dr. C. G. Overberger
Dr. Milton Harris

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Committee on Nominations

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John Kotrady
Chairman of Each AIC Chapter

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44 New Street, New York 4, N. Y.
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Qualifications

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Dr. Morris Kenigsberg
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Legislation

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Stephen P. Cobb, Jr.
Dr. John L. Hickson
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Dr. Max Tishler

Ethics

Dr. Sidney M. Cantor, *Chairman*
25 Rolling Road, Overbrook Hills,
Philadelphia 31, Pa.
Dr. Emil Ott
Dr. George L. Royer

New Chapters & Expansion

Martin B. Williams, *Chairman*
1013 Pratt Ave., N.E., Huntsville, Ala.

Chapter Activities

Dr. Lawrence T. Eby, *Chairman*
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Dr. Lloyd A. Hall
Bernard E. Schaar

Library Committee

Dr. Max Bender, *Chairman*
American Cyanamid Co.,
Bound Brook, N. J.
Dr. Murray Berdick

Manpower

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William H. Nichols Lab., New York
University, New York 53, N. Y.
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O. B. J. Fraser
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University of Florida, Gainesville, Fla.
Dr. Alfred H. Free
Dr. Warren M. Sperry

Constitution and By-Laws

Benjamin Sweedler, *Chairman*
420 Lexington Ave., New York, N. Y.
(17)

Student Medals

John Kotrady, *Chairman*
The American Institute of Chemists,
60 E. 42nd St., New York 17, N. Y.

Public Relations

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Public Relations Department,
W. R. Grace & Co.,
3 Hanover Sq., New York 4, N. Y.
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**Special AIC
Announcements****Social Hour in New York**

A Social Hour for AIC members and their friends is scheduled to be held Monday, September 12, during the Fall meeting of the American Chemical Society in New York, N. Y. The exact location and time will be announced in the September Chemist, and in the program of the ACS.

**The Philadelphia
Chapter Elects**

The Philadelphia Chapter has elected the following new officers:

Chairman, Dr. E. M. Kipp, 161 Hunters Lane, Devon, Pa.
Vice Chairman, Dr. C. K. Deischer, 158 Idris Rd., Marion Station, Pa.
Secretary, Dr. E. H. Bitcover, 8237 Michener Ave., Philadelphia 50, Pa.
Treasurer, Frank E. Hamerslag, Wyeth Institute for Medical Research, P.O. Box 8299, Philadelphia 1, Pa.
National Council Representative, Dr. James L. Jezl, Sun Oil Company, Marcus Hook, Pa.

**Meeting of
National AIC Council**

A meeting of the National Council and Board of Directors will be held, Sunday, September 11, in the Hotel Roosevelt, Madison Avenue at 45th St., New York 17, N. Y. at 5:30 P.M.

**New Officers for the
Ohio Chapter**

Officers for the Ohio Chapter for the season 1960-61 are:

Chairman, John Dickenson, IV, The Harshaw Chemical Co., Cleveland 6, Ohio
Chairman-elect, Dr. Thomas Sumner, Head of Chemistry Department, University of Akron, Akron, Ohio
Secretary-Treasurer, Thomas W. Riener, Industrial Rayon Corp., Cleveland 1, Ohio
Cleveland District Director, E. R. Stacey, The Harshaw Chemical Co., Cleveland 6, Ohio
National Council Representative, Dr. George F. Rugar, Assistant Director, Research Department, Diamond Alkali, Painesville, Ohio

Niagara Chapter Officers

The officers for 1960-61 chosen by the Niagara Chapter are:

Chairman, Dr. J. Frederic Walker, E. I. du Pont de Nemours & Co., Inc., Niagara Falls, N. Y.
Chairman-elect, Frederick L. Koethen, Route 19, River Road, Niagara Falls, N. Y.
Secretary, Dr. Howard W. Post, Chemistry Department, University of Buffalo, Buffalo 14, N. Y.
Treasurer, Ray F. Seifert, Titanium Alloy Mfg. Co., National Lead Co., Niagara Falls, N. Y.
National Council Representative, Lyle J. Mahar, Coke Oven Lab., Bethlehem Steel Co., Lackawanna, N. Y.
Representative to Technical Societies Council, Thomas J. Finnegan, Niagara Mohawk Power Corp., 535 Washington St., Buffalo 3, N. Y.
Chairman of Membership Committee, Clarence A. Weltman, 8969 Hennepin Ave., Niagara Falls, N. Y.

Bendix Aviation Corporation has changed its name to The Bendix Corporation. Executive offices are in the Fisher Building, Detroit 2, Mich.

The Purpose of Academic Research

Dr. Charles G. Overberger, F.A.I.C.

Head, Chemistry Department, Polytechnic Institute of Brooklyn, Brooklyn 2, N. Y.

(Presented when the author received the Honor Scroll of the New York AIC Chapter,
May 26, 1960, New York, N. Y.)

IN discussing this topic, we should first ask ourselves, "What is the purpose of academic research?" To answer this, I would say that the foremost purpose is to train students "how to think." We have too many Ph.D. students that are trained on daily rations from their thesis advisor who are lost when they must go on their own. For the first time in their lives, either at the Masters' or Ph.D. level, but particularly at the Ph.D. level, students should be asked to stand on their own feet and utilize the concepts and background that they have learned thus far in studying chemistry.

The student should ask himself, "What should I do next in my problem? Do I see any promising ways of attacking the problem that my thesis advisor has not suggested? Do I see any new experimental approaches? What should I discuss next with my thesis advisor?", etc. This is the type of thinking that we really need in research people; these are the attributes that are the responsibility of the professor in charge to develop.

Second, we have to teach him how to use existing research tools. In many cases this is somewhat routine since a special course may teach him many of the techniques of utilizing certain equipment. Nowadays in almost all

branches of chemistry, the use of infrared, ultra-violet, chromatographic, magnetic resonance equipment, etc., is essential. Often the student learns how to use these tools, as he proceeds on his research problem, from other students.

The student must get into the frame of mind of conceiving new ideas—even poor or mediocre ideas. He has to learn the concept of thinking about his problem. This is a fairly monumental task because the average graduate student at his level of training does not quite have the scope or time to develop himself in this direction. The thesis advisor usually performs it for him. This trait usually comes later for those students who are the most creative and most gifted students.

Finally, there is the question of how to coordinate a good idea with an experimental approach. This is the ultimate in creative research. It is something that, for the rest of our lives, all scientists directing research strive for, and do not attain as well as they would like. Good ideas are plentiful, but valueless if there is not some experimental way to attack the problem. On the other hand, attacking a routine problem by instrumentation or technological methods can be trivial research. There must be a

combination of a good idea, a proper procedure, and an understanding of how to carry through the ideas to experimental fruition. One without the other is meaningless. This combination is good research anywhere, either in academic or industrial laboratories.

At this point, there is a matter concerning publication of academic research which I wish to raise. Research carried out in academic institutions, if it is of proper calibre, should be published in reputable scientific journals. In the first place, this is part of the basic training of the student. Research for publication should be of the highest critical type. In order that someone reading the publication may obtain, as concisely and rapidly as possible, the message that the research is supposed to give, it should be written in a forthright manner. The student should certainly help in the preparation of the manuscript. It is part of the development of the scholar's reputation that he publish the research which he is directing, in an intelligent and concise manner in a reputable journal.

I think that scholars should publish even what they consider relatively insignificant research. Many times what might seem insignificant to us now, might well be significant 10, 20, or even 30 years from now—this has proven to be the case time and time again. There are some academic scholars who do not consider it ap-

propriate for them to publish what they consider insignificant material, (note that I said insignificant, not mediocre) on the grounds that it does not do their reputation any good, and may in fact hurt it. I would argue with this general philosophy. It seems to me that publication of one's research, insignificant though it may seem, is almost a duty in this day and era of the rapid advancing explosion curve of science.

Now to review briefly some of the values of academic research: It is almost inevitable that someone, usually in an industrial or government laboratory, (since there are many more such laboratories working in chemistry than other academic laboratories) will use a concept, procedure, compound, or an approach from a publication from an academic laboratory. A good percentage of our new concepts, procedures, compounds, and our newest approaches, have come from our academic laboratories. Not all, of course, because there is some very excellent exploratory work being carried out in industry which is published from time to time. For example, witness the recent articles on the use of sulfur tetrafluoride as a fluorinating agent to prepare fluorocarbons and the work on tetracyanoethylene recently published by the du Pont Company, or research on the irradiation of polyethylene, published by the General Electric Company.

Many pharmaceutical firms, such

THE PURPOSE OF ACADEMIC RESEARCH

as Chas. Pfizer & Company, publish a wealth of information on the structure and synthesis of natural products. This dependence on "a reservoir of knowledge from academic laboratories" by large industrial concerns has been stressed by many people in the last twenty years. It is a familiar cliche, but nevertheless it cannot be repeated too many times. It has really only been within the last five years that the matter has been sufficiently impressed upon the management of large chemical companies, that significant amounts of money for the support of basic research in universities has been forthcoming.

A board-of-directors' member of a company, when inspecting an annual proposal for a budget and upon seeing the item, "Educational Fund," should not ask of the vice president or comptroller presenting the budget, "What are we getting for this money?" or "How can we justify this expenditure?" His immediate questions should be, "What is the best way to administer this money," or "How can we make the best contribution—and why can't we give more?"

Unfortunately, this was not always the case for top management, but I am excited and quite relieved at the response of industry for the support of basic research in the past five years. While it has not been large in terms of a total sum, there has been a great deal of wise administration and use of funds towards the support of grad-

uate schools to train more students, who inevitably find their way into their laboratories. Industry is to be commended for this attitude and I hope it will continue the increase. The day may come soon when funds for capital spending are given for new laboratories.

This brings us to another question regarding academic research which has been discussed very thoroughly within the last ten years and requires comment here. This is the question of government support. There can be no doubt that government support of research since 1946 has been responsible for an increase in the number of chemists trained to do research, and an increase in the size and number of graduate schools in chemistry. This is simply an established fact, regardless of whether the support comes from the Office of Naval Research, Office of Ordnance Research, Quartermaster Corps, Office of Air Research and Development Command, Wright Field Materials Branch-Polymer Section, the National Science Foundation, Atomic Energy Commission, etc.

There has been a great deal said about the fact that sponsored research will inevitably lead to certain practices which tend to contribute to making academic research less basic, and produce factors which are conducive to making a university less of a community of scholars . . . There are two principles which I firmly ad-

here to and which I feel should be emphasized.

First, no scholar should decide that he wishes to work in a field simply because he knows that he will be able to get research support from the government for it. If this is his driving force in deciding that he will work in a certain area, it is a serious mistake and he should be told so. He should work in an area where he has motivation and interest and where he has some good ideas. On the other hand, if a scholar does have some ideas and has begun a research program, there is no reason why he should not be supported by a government agency wishing to support basic research in this area—for the good of the country and for the good of their particular service.

Second, no university should allow any one professor to form an empire which necessitates a large amount of personal administration and management in the running of a super-research program. This may seem like a somewhat harsh indictment, but it must nevertheless be said. Such practices tend to make for unbalanced departments and educational headaches—in a sense segregated faculties. If these two principles are kept in the forefront of university administration responsible for the development of their scholars in any particular scientific department, we should take all the government support we can get. The era of university research prior

to 1941 is gone. A new era has been upon us since 1946 and 1947 and the sooner we realize this, and the better we *adjust* our academic principles (not *lower* our academic principles) the better off all of us in universities will be.

Our distinguished president of the Polytechnic Institute of Brooklyn, Dr. Ernst Weber, has recently said some words on this subject, which have been widely quoted (*Chemical & Engineering News*, May 16) and which support this view. In this talk there are some very courageous statements regarding these matters, resulting from a thorough analysis of a school which has a high preponderance of scholars and a relatively low income from endowment.

The primary purpose of academic research is to train students to do critical creative research, not to further the reputation of the scholar who is directing research at this time. There are always young people who aspire to brilliancy, either seeking academic positions or who are already in them, who particularly at early stages in their development can see no harm in a situation in which they have five post-doctoral students and two graduate students.

Such a situation is very unacademic and very unwise, and a university should not permit such a performance. This young man is seeking to establish himself as an academic scholar and improve his reputation, which is

THE PURPOSE OF ACADEMIC RESEARCH

good, but at the same time he is sacrificing in part his real purpose. There may be instances in academic institutions where an experienced reliable investigator may have a considerable number of post-doctoral people, but they should never take the maximum amount of his research time. It seems to me that a university is not the place for such brilliant scholars who only want to work with post-doctoral people, but rather they should be in a research institute of some type where training people how to do research creatively is not the primary purpose. Of course there are some training aspects in the post-doctoral arrangement and we should not lose sight of this fact. Post-doctoral research represents additional training for a scholar, which is most important.

I do not imply that one should not have post-doctorals nor that very good research is not carried out by post-doctoral students—I use the word student purposely. I do imply that an excess of abnormal situations of this kind should not take place until the senior investigator has some maturity and until he understands in a somewhat better perspective precisely what his function is in the university.

All research, academic or otherwise, must start with an idea. Most ideas in academic research do not immediately focus their attention on a practical goal. On the other hand there is always a goal in any type of research. Basic research is often in-

correctly defined as the acquisition of knowledge with the implication that there are no goals. This is certainly not so—we all have goals. We allegedly see what our goal is when we first start the research. In most of the cases, we may be wrong, but we try for a goal. It may take the form of a particular compound which we wish to synthesize, and the goal is the synthesis of this compound. The goal may be the illucidation of the nature of a reaction mechanism. It may take the form of the proof of structure of a very complex molecule. In most cases this goal may never be achieved, but as a result of focusing our attention on some goal we should ultimately arise, if we are observant, with some new and constructive chemical knowledge with interest to someone.

If one is an experimental chemist he usually finds something interesting in a "sidelight" of the original goal which may take on a new appeal on proper experimentation. This is one of the great values of academic research. In fact, a very large percentage of discoveries of new reactions in organic chemistry, which incidentally are not very common, or new concepts or understanding of new concepts usually occurs this way. An original goal is deviated in some way by the discovery or some other new aspect of the research. It may or may not be closely related.

This is the virtue and one of the joys of academic research, because a scholar can instantly follow his leads as he sees them. He does not have to worry about the question of whether the research is of a practical nature or not. I sometimes like to call this point of view the "value of useless research"—I am throwing stones with this particular sentence at individuals

who are inclined to think of basic research as of little practical value. Nothing could be further from the truth.

Academic research will continue to be the foundation of our training program for scientists and the cradle of many new ideas, principles, and products.

About Dr. Overberger

CHARLES GILBERT OVERBERGER was born in Barnesboro, Pa. He was graduated from Pennsylvania State University with the B.S. degree (1941) and from the University of Illinois with the Ph.D. degree (1944).

As a graduate student he was teaching assistant, research assistant, and University Fellow. From 1944 to 1946, he was research associate at the University of Illinois with Professor C. S. Marvel, Hon. A.I.C. From 1946 to 1947, he held a du Pont Postdoctorate Fellowship at Massachusetts Institute of Technology with Professor A. C. Cope, F.A.I.C.

Coming to the Polytechnic Institute of Brooklyn in 1947 as assistant professor of organic chemistry, he was promoted to associate professor in 1950 and to full professorship in 1952. He also was appointed associate director of the Polymer Institute in 1951. In 1955 he assumed the duties

of head of the Department of Chemistry.

Dr. Overberger married Peggy J. Bachman from Champaign, Illinois, in 1945. They have four children, Erica, Carla, Charles Thomas, and Ellen Ann.

Dr. Overberger's principal researches are in the fields of synthetic organic, organic reaction mechanisms, and polymer chemistry. More specifically, his researches are in the fields of ionic polymerization reactions of free radicals in solutions, the effects of structure on the decomposition of radical formers, particularly azo compounds, the aromatic character of cyclic sulfones and asymmetric polymer syntheses. He has published about 120 papers. He is a consultant for several industrial concerns and agencies for the Defense Department and has served on a number of Advisory Panels for the Defense Department, the National Science Foundation, and the National Academy of Sciences.



DR. OVERBERGER (left) and DR. E. J. DURHAM

He is a member of many professional societies. He has been active in the American Chemical Society and is presently chairman and a member of the Board of Directors of the New York Section and a national councilor. He is also chairman of the Division of Polymer Chemistry, a member of the Council Policy Committee, and a member of the Advisory Board of *Chemical & Engineering News*. He is a member of the ACS

advisory committees to the Chemical Corps and to the Bureau of Standards.

He is one of the editors of a new review journal, *Fortschritte der Hochpolymeren-Forschung*, an editor of the *Journal of Polymer Science*, and the first editor of a new series of volumes on "Macromolecular Syntheses."

Fishing, an occasional round of golf or set of tennis, and American history constitute his recreational activities.

Presentation to Dr. Overberger

DR. CHARLES G. OVERBERGER, F.A.I.C., Head, Department of Chemistry, Polytechnic Institute of Brooklyn, Brooklyn, N. Y., received the Honor Scroll of the New York Chapter of THE AMERICAN INSTITUTE OF CHEMISTS, at a meeting held May 26, 1960, at the Shelburne Hotel, New York, N. Y.

Dr. E. J. Durham, chairman of the Chapter, presided.

Dr. Overberger was introduced by Dr. Herman F. Mark, F.A.I.C., director of the Institute of Polymer Research of the Polytechnic Institute of Brooklyn, who delightfully described the honor recipient's career as it would be projected into the future by computer calculations!

After accepting the Honor Scroll from Dr. Durham, Dr. Overberger spoke on "The Purpose of Academic

Research." (See preceding pages.)

The citation on the Honor Scroll reads:

To Dr. Charles G. Overberger

In recognition of his accomplishments as a brilliant scientist, and an outstanding teacher, and particularly in recognition of his devotion to chemistry as a profession, and his promotion of professional attitudes in younger chemists.

Dr. Harold Weinberger, F.A.I.C., has been appointed chairman of the Chemistry Department at Fairleigh Dickinson University for the three campuses located at Rutherford, Teaneck and Florham-Madison, N. J. His office will be on the Teaneck campus.

Dr. Ralph T. K. Cornwell, F.A.I.C., has been named technical assistant to the president of American Viscose Corporation, Philadelphia 3, Pa. He will be located at the Philadelphia headquarters office handling special project assignments. He was formerly director of research for the corporation's Film Division.

Dr. William L. Davidson, F.A.I.C., head, propellant coordination panel, Food Machinery & Chemical Corp., San Jose 6, Calif., has been elected chairman of the board and chief executive officer of Trans-Sil Corp., Englewood, N. J.

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Dr. Harold W. Stiegler, F.A.I.C., has retired as director of research at the American Association of Textile Chemists & Colorists, Lowell, Mass., where he has served for the past fourteen years. He lives at 148 Salem Street, Andover, Mass.

Henry F. Payne, F.A.I.C., professor in charge of organic coating research and technology, University of Florida, Gainesville, Fla., has been chosen to present the annual Joseph J. Mattiello Memorial Lecture at the Annual Meeting of the Federation of Societies for Paint Technology, to be held at the Hotel Sherman, Chicago, Ill., Oct. 31-Nov. 2, 1960.

Dr. Sidney D. Kirkpatrick, Hon. A.I.C., has been elected to the board of General Aniline & Film Corporation, New York, N. Y.

The Rising Stature of the Chemist and Chemical Engineer

Dr. Charles Harold Fisher, F.A.I.C.

Director, Southern Utilization Research & Development Division,
New Orleans 19, La.

(Presented when the author received the Honor Scroll Award of the Louisiana Chapter of The American Institute of Chemists, New Orleans, La., June 7, 1960.)

DISCUSSIONS of professional status usually emphasize vexing problems and unsatisfactory situations. Such discussions can be discouraging and pessimistic. I prefer to emphasize the positive and the good. If possible, I would like to generate some optimism and cheer.

Certainly there is much to be cheerful about. Chemists and chemical engineers, as well as other scientists, should be pleased and encouraged because scientists have made tremendous progress in deserving and winning status and recognition.

First, we should be pleased because research has made fantastic progress. As you are aware, chemists and chemical engineers, working with other scientists, have literally remade our world and our way of life. Because chemistry and chemical engineering are sometimes compared with medicine, it is interesting to note that, for the first time in history, we are spending more money on drugs, developed primarily by chemists and chemical engineers, than we are spending for doctors.

It is abundantly clear, and there is good agreement on this, that research has wrought remarkable transforma-

A simple, two-ingredient recipe can be recommended for further improvement in status and recognition. As individuals, we need to strive even harder through dedicated and competent efforts to perform better. As a group, we need to support each other by supporting THE AMERICAN INSTITUTE OF CHEMISTS and similar organizations.

tions and has achieved miracles. But does the scientist receive adequate recognition? Perhaps, science and scientists do not receive all the recognition they deserve; nevertheless, the situation has improved greatly.

Science is so well known these days that it is called upon routinely to solve major problems, such as those in health, national defense, agriculture, and industrial production. Moreover, research is now used as a standard tool by industry to increase profits. At least two published studies have shown that the profits of various industry groups are directly proportional to the volume of their research effort.

Contrary to the situation of only a few decades ago, popular information media now carry many stories about science and scientists. For example,

Fortune Magazine is now publishing a series of stories on scientists under the heading "Great American Scientists." The first story in the March 1960 issue was on physicists. The second article, in the April issue, was concerned with chemists. Many other examples could be cited. Certainly the public is now much better informed about research and the men and women doing research.

The rapid growth of research represents one important form of recognition. Funds for research and development have increased from the mere pittances of a few decades ago to \$12 billion or more annually. This sum, about 2% of our gross national product, is approximately equal to that spent for advertising. This is indeed a real achievement!

For the past 150 years, the proportion of scientists and engineers has increased tenfold every 50 years. Dr. Yale Brozen, a specialist in business and research trends, predicts that research will continue to grow rapidly. His prediction: Research growth over the next 15 years will occur at an annual rate of 7 to 8%. The portion of gross national product devoted to research and development is expected to rise from 1.9% to 3% over the next 15 years, with an ultimate ceiling of 5% in the next century.

Science has great stature in national affairs. Our Embassies have science attachés. Dr. Wallace Brode is science advisor to the Secretary of State.

Last year, President Eisenhower appointed Harvard chemist, Dr. G. B. Kistiakowsky, to be his Special Assistant for Science and Technology. Some suggest that the U. S. Department of Commerce appoint an Assistant Secretary for Science and Technology. And it has been strongly recommended also that a Department of Science and Technology be established within the President's Cabinet.

Science occupies the center of the stage on the international as well as the national level. This is emphasized in articles entitled, "Future of the World," by internationally prominent authors in the May 1960 issue of *Nation's Business*. Dr. Luns, 1958-59 president of the North Atlantic Treaty Organization, wrote:

Among the factors that will help shape the future and which governments must consider are: The future progress of science and technology...

The age of science has, fortunately, opened up possibilities of foreseeing the future and meeting its challenges. The influence of science on government policy has already made itself felt.

Events of the next 25 years will depend on how well we use this kind of planning in meeting the problems that beset us now and which must be solved before we can hope for a real and lasting peace.

The improved status of scientists is reflected, to some degree at least, in monetary compensation. A recent survey by the National Science Foundation shows that the annual median pay of chemical engineers is almost as great as that of physicians!

The foregoing does not deny the

existence of problems and the need for further improvement. A simple, two-ingredient recipe can be recommended for further improvement in status and recognition. As individuals, we need to strive even harder

through dedicated and competent efforts to perform better. As a group, we need to support each other by supporting THE AMERICAN INSTITUTE OF CHEMISTS and similar organizations.

A Chemist's Chemist

Dr. George W. Irving, Jr.

*Deputy Administrator, Agricultural Research Service,
U.S.D.A., Washington, D.C.*

(Presented when Dr. C. H. Fisher received the Honor Scroll of the Louisiana AIC Chapter.)

DR. CHARLES HAROLD FISHER is outstanding and is approaching the high noon of an illustrious career. It is important to remind ourselves of the tangible, earthy virtues of this man, as well as to laud his noble, intangible virtues.

Hap Fisher was born, raised and schooled as a boy and as a young man, in Virginia, at a time and in places where rigorous teaching of the three R's was not frowned upon by school boards and parent-teacher groups, and the student was taught to expect that life would return satisfactions to him in proportion to his contributions to it. I doubt that young Hap Fisher ever received academic credit for courses in cheerleading or the theory of the beanbag. I doubt that he was tempted to think that there was an easy way to prepare for a life of usefulness, or that his possible failure or inadequacy would be the fault of any but Hap Fisher himself.

This hard foundation he took with

him to the University of Illinois, where a bluff will not see you through a semester and one must really hold the cards to compete as the graduate game in chemistry is played there. With his doctorate, a deep grounding in organic chemistry, and a good working knowledge of the basic techniques of teaching and doing research, Hap Fisher went to Harvard, where for three years he was instructor in chemistry. Here he added to his thorough, fundamental knowledge of his subject, and a second characteristic of the man emerged—the ability to inform and inspire others who shared with him a yearning to follow chemistry as a profession.

There are many who can testify to the profound impact that Fisher's knowledge and infectious enthusiasm for his subject had upon them during this period. We know of several—one recently received the Honor Scroll of the Chicago AIC Chapter; another, a professor at Columbia, is well

known for his researches in the field of free radicals.

Dr. Fisher moved, next, to the U.S. Bureau of Mines in Pittsburgh, where a third characteristic became apparent. He demonstrated that he is a most able, imaginative organic chemist, insatiable in his desire to do creative research. Readers of the journals came to equate the name of Dr. Fisher with originality in organic chemical approaches.

With momentum undiminished he arrived in Philadelphia in the early '40's to become a part of Agriculture's new venture there—the Eastern Regional Research Laboratory of the former Bureau of Agricultural and Industrial Chemistry. There he was not only enabled to apply his creativity to building new products from farm crops but to sharpen a fourth characteristic—the ability to direct the research of an able group of chemists. He and his group were prolific and numbered among their achievements the basic work on acrylate polymers that provide us with many of today's synthetic elastomers.

Ten years ago Dr. Fisher was chosen to head the Department's Southern Regional Research Laboratory in New Orleans. This long step from research director and participant in a small group to directorship of a large, diversified research organization, with its added problems of management and public relations, permitted him to exhibit a fifth, and

until then latent, characteristic—that of administrative leadership. Perhaps no one was ever called upon to assume a larger responsibility. The commodities of the Southern region, cotton, cottonseed, peanuts, pine gum, sugar, rice, and citrus fruits, were, for the most part, new to him. The staff that he was called upon to direct included bacteriologists, food technologists, textile specialists, engineers, and representatives of other disciplines with which Dr. Fisher had had little prior experience. But no one could have risen more fully to the demands made of him. He so immersed himself in the task that his laboratory rapidly assumed the position of great respect that it now commands in agriculture and in the South.

All of this he has done without losing friends but by making them; without compromising his fervor for good, solid, creative chemistry, but by bringing forth the best efforts of his scientific staff and inspiring them to follow his leadership; without losing touch with the fields he has left behind, but by continuing to display an uncanny ability to keep his eye on the whole broad field of technology, to anticipate breakthroughs, and to plan the research program of his laboratory so as to bring about the greatest benefit to all concerned.

This is where we find Dr. Fisher today. And the time is barely noon. There is no question that we can be optimistic about the afternoon.

A CHEMIST'S CHEMIST

It is a great responsibility that Dr. Fisher has in New Orleans and we in Agriculture are most fortunate that one of his capability has chosen to lend his talents to the job at hand. The challenge presented to the scientist by the problems of agriculture are tremendous, but not generally appreciated in an age when glamour surrounds those who seek to conquer space and the remaining physical ills.

Research in agriculture will not only solve its own problems but will contribute to both of these conquests, just as history shows it has played an indispensable role in all of our progress, in war and peace, in sickness and in health. This is beginning to be recognized, but more important, appreciation is dawning that there is a growing interdependence in all parts of our economy. Dr. Fisher has been among the first to anticipate this evolutionary change and to include close working contacts with other government, state, medical and industrial research organizations as a continuing necessity in keeping the programs of his laboratory timely, vigorous and productive.

It is the purpose of research to find answers to questions so that appropriate actions can be taken. A prerequisite in every research program is to find the right man to lead it. In Dr. Fisher we have found the right man. We have one who is a gentleman and a chemist; who prepared himself well for the job he wanted

to do and who uses what he knows with skill, determination, judgment and tact; who is a lucid writer, a facile and engaging speaker, and best of all, a clear, productive thinker; who possesses the knack for encouraging and stimulating others to try to match his pace; who can be original and independent and yet be a solid organization man, loyal to those who work with, under and over him; who likes people and in turn is liked by them; who is indefatigable in the pursuit of his goals—an attitude that is the joy of the Department and perhaps, at times, the despair of Mrs. Fisher, who like others, who have chosen to share their lives with a dedicated scientist, should have honor scrolls of their own for their patience and understanding; and finally, who as our co-worker, makes many of us with far fewer talents look better than we really are. Yet with all of this he avoids Kipling's pitfall and never "looks too good nor talks too wise."

Truly, we have an outstanding man among us: Dr. Charles Harold Fisher, a chemist's chemist and my very good friend.

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Honor Scroll Presentation to Dr. Fisher

DR. CHARLES HAROLD FISHER, F.A.I.C., director, Southern Utilization Research & Development Division, Agricultural Research Service, U. S. Department of Agriculture, New Orleans, Louisiana, received the Honor Scroll of the Louisiana Chapter of THE AMERICAN INSTITUTE OF CHEMISTS at a dinner meeting, June 7, 1960, held at Signorelli's Restaurant, New Orleans. Dr. Winston R. deMonsabert, professor of chemistry at Loyola University and chairman of the Chapter, presided.

The presentation address was made by Dr. George W. Irving, Jr., deputy administrator, Agricultural Research Service, U. S. Department of Agriculture, Washington, D.C.

DR. JOHN L. HICKSON, F.A.I.C., has been elected vice president and scientific director of the Sugar Research Foundation, Inc., New York 5, N. Y. He succeeds Dr. Henry B. Hass, F.A.I.C., who has resigned as president of the Foundation but will continue to serve as consultant. Dr. Hickson is the new chairman of the New York AIC Chapter.

DR. JASPER H. KANE, F.A.I.C., vice president for research and development and a director of Chas. Pfizer & Co., Inc., New York, N. Y., has been appointed to the Industry Advisory Council of the U. S. Army Chemical Corps, for a three year term.

Dr. Fisher accepted the scroll with an address on "The Rising Stature of the Chemist and Chemical Engineer." (See preceding pages).

The Louisiana Chapter then presented student medals to Patricia Leininger of St. Mary's Dominican College and Thomas Ortolano of Loyola University, for their outstanding scholarship and leadership in chemistry. The Rev. Homer R. Jolley, S.J., F.A.I.C., of Loyola University, made the presentations.

The citation on the Honor Scroll to Dr. Fisher reads:

For meritorious service to the profession of chemist as a teacher, research scientist, and research administrator.

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The Chemist in the Food and Drug Administration

(and Career Opportunities There)

Robert C. Stanfill

Director, Philadelphia District Food & Drug Administration, U. S. Department of Health, Education & Welfare, 1204 U. S. Custom House, Philadelphia 6, Pa.

(A paper, here condensed, presented at a recent meeting of the Philadelphia AIC Chapter, in Philadelphia, Pa.)

THE Food & Drug Administration (FDA) is a relatively small but important unit of the U. S. Department of Health, Education, and Welfare. Its primary function is to enforce the Federal Food, Drug & Cosmetic Act of June 25, 1938, and other laws designed to protect consumers. The 1938 law was preceded by the Pure Food & Drugs Act of June 30, 1906, and the Food & Drug Administration was originally a part of the Department of Agriculture. It was transferred to the Federal Security Agency in 1940, where it remained until the Department of Health, Education, and Welfare was established.

FDA has always been a scientific institution as well as a law enforcement agency of the Federal government. The goals sought by the FDA scientists are pure foods; safe, effective drugs; safe cosmetics; and truthful labeling. Their job is to apply scientific training and experience in protecting more than 170 million consumers from injury, from filth, and from fraud.

There was a quarter century of research behind the crusade led by the

late Dr. Harvey Wiley (Hon. AIC) for the original Pure Food & Drugs Act of 1906. This research was climaxed by the experiments of the famous "poison squad" in which young men volunteers ate food dosed with measured amounts of preservatives then in common use, and recorded their symptoms. The crude pharmacology of the "poison squad" is a far cry from the carefully controlled testing methods of today, but the fundamental purpose remains—to safeguard the public health and pocket book.

My predecessor, Clement Starr Brinton, was a young chemist who worked in Washington under Dr. Wiley's direction before assignment to enlarge the Philadelphia laboratory in 1905.

It has never been more important than now that there be an adequate scientific staff for the proper administration of the Federal Food, Drug & Cosmetic Act, including the recent Food Additives Amendment and the Pesticide Residues Amendment. Equally important is it that there be provided an adequate scientific staff for proper conduct of food, drug and

cosmetic manufacturing, development and distribution.

Technological progress has brought great changes in the food and drug industries. There are new processing methods. Packaging methods bear little resemblance to those of a few decades ago. There are new forms of preservation, storage, and distribution facilities, new convenience foods, new "miracle" drugs, and new chemicals that find their way into foods inadvertently or intentionally to serve some more or less important need.

It would be impossible to enforce the modern food and drug laws without scientific methods to detect violations and competent laboratory controls to protect the public by preventing violations.

What fields of science are represented on the staff of the FDA? Almost every field of the physical and biological sciences, including chemistry, physics, bacteriology, pharmacology, microbiology, medicine, pharmacy. The FDA scientific activities are centered in the Bureau of Biological Sciences, in Washington, consisting of seven laboratory divisions. Also, there are interesting and challenging assignments of food and drug inspectors and field scientists at seventeen field district offices and laboratories, located at principal cities across the U. S. Administrative scientists do interesting and important work both in Washington and in the field.

Unmatched Opportunities for a Career

In all these areas the scientist in the FDA has unmatched opportunities for satisfying public service, variety of experience, and professional advancement. FDA is undergoing its greatest period of growth and opportunity for scientific and administrative progress.

I speak as a district director who was appointed food and drug inspector more than 34 years ago, after dabbling in bacteriology, biology, chemistry, physics, and meteorology. I planned to work with the FDA temporarily, but have never found a time when the work was not too interesting to leave. The challenges and opportunities are now greater than ever. For example, FDA scientists keep abreast of new techniques in their field through membership in professional societies and through research and cooperation with such distinguished groups as the Association of Official Agricultural Chemists, the U. S. Pharmacopoeial Convention, and the National Research Council. They write and publish papers on their work and are internationally recognized as authorities in their respective fields.

Field Districts are vigorously recruiting for chemists, bacteriologists, entomologists and food and drug inspectors. Most of the recruiting in the field is for recent graduates. Washington laboratories are recruit-

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ing for chemists, pharmacologists and other scientists who have masters and doctorate degrees.

The Seven Scientific Divisions

I. Division of Food. The Division of Food offers challenging opportunities to physical, organic, and biochemists for developing methods to determine the true composition of foods that contain adulterating substances in small amounts. These scientists provide consumer protection by maintaining up-to-date knowledge of food processing and analytical methods. They ascertain how to determine whether fruits and vegetables contain excessive residues of pesticides used by growers; whether the fruits vegetables, eggs, or other foods, were fresh and wholesome when processed; whether there is danger of adulteration by complex chemical additives, or by the unintentional addition of other substances, such as new plasticizers, antioxidants, catalysts, impregnants, and coatings from food packages. FDA food chemists use the flame photometer to measure sodium content and make sure the label statements are accurate on "low sodium" dietary foods used by a half million heart patients.

Just now our food chemists are testing hay, forage, milk, meat, and food crops for residues of organic phosphate pesticides and chlorinated hydrocarbon pesticides residues. This is done by using paper chromatog-

raphy to identify and measure minute traces of toxic organic pesticides remaining in or on the food.

Certain odors are characteristic of decomposition of food or other organic matter, but it is not always possible to prove decomposition by odor alone. In determining if fish was spoiled before canning, the food chemist examines canned fish for odor and appearance. He then uses a steam distilling apparatus to remove volatile fatty acids and a tall extraction column to separate lactic and succinic acids—indices of decomposition.

These are typical of the answers to problems in analysis of food, as developed by food chemists.

II. Division of Pharmaceutical Chemistry. The broad interest of the scientists in this Division is the integrity of drugs. The safety of the patient, his recovery, even his life, may depend on the accuracy of dosage and the purity of an important drug.

These chemists keep well informed about the recent developments in analytical chemistry. They collaborate with chemists in industry and elsewhere. They cooperate with the revision committees of the *U. S. Pharmacopoeia* and the *National Formulary*; with the Pharmaceutical contact section of the Pharmaceutical Manufacturers Association. They collaborate with the Association of Official Agricultural Chemists and committees of the National Research

Council. They develop analytical methods used by our field laboratories in identifying drugs and evaluating their qualitative composition.

This group is currently placing emphasis on the application of paper and partition chromatography to separate and purify the constituents of drugs. Our pharmaceutical chemists use infrared and ultraviolet spectrophotometry for identification and quantitative estimate.

FDA chemists are also law enforcement officials. As such, they appear as expert witnesses in court trials to testify regarding the accuracy and results of the methods they use. In order to present testimony effectively to judges and juries, who may have little scientific knowledge, the FDA chemists must have a broad background of information, including the fundamental chemistry of the drug in question and the nature of materials with which it is associated.

To illustrate some of the work done by pharmaceutical chemists, we should mention that positive identification and rapid quantitative estimation of many drugs can be made with the recording spectrophotometer. For example, the chemist prepares a sample for infrared analyses by the potassium disk technique. 1.0 mg. of the sample and 200 mg. of potassium bromide are subjected to 35,000 pounds pressure in an evacuated die to produce a transparent disk. An-

other chemist records the infrared absorption spectrum of delta-dehydrocortisone acetate, using the potassium disk prepared by the described method.

Digitoxin, a glycoside from plants of the foxglove family, is used in the treatment of certain heart ailments. Its dosage must be closely regulated. Before an accurate assay can be made, closely related impurities must be eliminated. This separation is made by paper chromatography.

A comparatively recent development in the pharmaceutical field is the "sustained release" tablet, designed to release measured doses of potent drugs over a long period of time after the tablet is swallowed. An "artificial stomach" has been developed to measure the rate of disintegration of sustained release tablets. This is important because, for example, too rapid absorption of nitroglycerin, used in heart disease, could result in serious overdosage. Use of this "artificial stomach" device by FDA chemists disclosed one so-called "tranquilizer" which took more than 10 hours to dissolve.

III. Division of Cosmetics. It develops and tests analytical methods to determine the safety and purity of the constantly growing number of new ingredients and new processes, and the increasingly complex formulas for modern cosmetics. One of the results of effective testing meth-

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ods is the rarity of injuries from cosmetics. Fewer cosmetics are injurious and allergenic reactions have been reduced.

An important function of the cosmetic scientist in FDA is testing and certifying the safety of all batches of coal tar colors intended for use in foods, drugs, or cosmetics.

The complicated analyses and research required for identifying and quantitatively measuring ingredients in market cosmetics require the use of modern equipment, such as recording spectrophotometers covering the range from ultraviolet to infrared. Other equipment includes apparatus for gas chromatography and continuous counter current extraction.

In determining the safety of coal tar colors, the analysts use a 30-tube counter current extractor to separate the coal tar colors and the toxic chemical compounds, the intermediates, used in the manufacture of the colors. Column chromatography is used to separate the isomers and homologs in a coal tar color sample . . . Most intermediates left in colors will fluoresce under ultraviolet light. The chemist may use a portable ultraviolet lamp to follow the progress of a chromatogram.

IV. The Division of Nutrition. With the advice and cooperation of the NRC, the American Medical Association, and other qualified scientists, this Division recommends the

official minimum daily requirements for vitamins and minerals that are essential in human nutrition. Chemists and biochemists conduct research to develop and improve assay methods. They keep acquainted with developments in nutritional science and are active in scientific societies associated with nutrition. The variety of interesting work which they do includes:

(1) Studies of metabolism through the use of apparatus to obtain the respiratory quotient of laboratory animals. This indicates the kind of food constituents being used by the animal carbohydrates, fat, or protein.

(2) In microbiological assays for niacin, the biochemist uses a mechanical pipette device for rapid addition of quantities of solutions to tubes for incubation. Growth of milk souring test organisms in the presence of graded amounts of niacin is measured photometrically.

(3) Measuring digestion of foods by comparing the food that is ingested with excretory products collected in metabolism cages.

(4) Measuring Vitamin D in foods and in pharmaceuticals is another important function.

(5) Small chicks are used in the bioassay for Vitamin D, which can be utilized by poultry. At the end of a 3-week test, the leg bones are examined by X-ray before ash determinations are made to evaluate the feed samples tested.

(6) Radioactivity is utilized in analysing for Vitamin B₁₂. Vitamin B₁₂ containing radioactive cobalt is used to determine the efficiency of the differential extraction procedure used in separating Vitamin B₁₂, useful in the treatment of pernicious anemia, from similar red compounds that have no value.

V. Division of Microbiology. This Division is manned by bacteriologists,

biologists, entomologists, mycologists and microanalysts, whose job it is to conduct bacteriological investigations of foods, drugs and cosmetics. Their research is in the investigation of food poisoning cases and in the study of pre-cooked or ready-to-eat foods, use of antibiotics for preserving meat and seafoods, experimental sterilization and pasteurization procedures by means of radiation or gaseous materials.

The microbiological branch is expert in detection of filthy and decomposed materials and adulterants in foods, drugs and cosmetics. They use and teach the techniques of chemical microscopy and optical crystallography for rapid and specific identification of a large number of chemicals and drugs. Microscopic and histological techniques are used in analytical methods for detecting foods or drugs that are decomposed or contaminated by insects or rodents.

Microanalysts use the Wildman trap flask to float out extraneous matter in the oil-water interface while keeping down food material being examined for possible contamination by rodent or insect filth. The microscope is used to identify any contaminants.

They use the Howard mold count to detect the use of decomposed material in processed fruit, vegetable, and dairy products. It is used extensively in examining tomato catsup,

fruit purees, and other comminuted foods.

Ballistics methods are used to identify illegally distributed drugs, such as sleeping pills involved in deaths from overdoses; or amphetamine, "pep pills," which have caused the death of truck drivers who used them for stimulation while driving instead of stopping to rest.

VI. Division of Pharmacology. It is responsible for searching out hidden dangers in food, drugs and cosmetics —whether the dangers be present because of accidental contamination or because of inadequate testing of new ingredients.

This Division continually tests and evaluates reports of testing of the new and complex chemical materials used in modern food and drug technology. In processed foods there are stabilizers, emulsifiers, acidifiers, neutralizing agents, preservatives, bleaching agents, thickeners and flavorers — to mention but a few.

In the production of fresh fruits and vegetables for consumption or for processing there are increasing numbers of toxic sprays, defoliants, plant growth regulants, sprout inhibitors, insecticides, fungicides, treatments for plant diseases, nematocides, etc. The amount of contamination may be minute but these scientists must determine if it is harmful. Their studies and research data are used to set tolerances for the amount of chemical

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residues that may safely be allowed on food crops.

Chemists, biochemists, pharmacologists, and pathologists work as a team to provide the assurance that our foods, drugs and cosmetics are safe. Their work includes long range investigations to determine the potential of cumulative harm from regular consumption of these chemicals over a period of years . . .

VII. The Division of Antibiotics. This division is a center of world wide research activity in every aspect of antibiotic research, and it is responsible for testing and certification of five leading antibiotics. About 40% of the dollar value of all prescriptions are for antibiotics. They have narrowed the list of infections which cannot be effectively controlled and they have established themselves in ophthalmology, oral surgery and dentistry. They are used widely in agriculture, food preservation, animal feeding, and medicine.

Tests performed on antibiotics, include tests for toxicity, calculations of potency from photoelectric and from colorimetric calculations of light transmission and tests to determine sterility of injectables.

The FDA Field Service

Chemists and other scientists are equally important in the field districts as in the FDA laboratories and offices in Washington. The 17 field districts, with the 18th under construction in

Dallas, Texas, are manned by inspectors, chemists, bacteriologists, entomologists, microanalysts, and other experts who rely on their scientific training and apply it directly to the challenging job of law enforcement.

These district organizations and their personnel operate at the front line of consumer protection, and are the eyes, ears, and pulse of the FDA. Washington headquarters directs the policies, the legislative, and the budget and appropriations functions and provides the research, legal, and administrative guidance needed to support and coordinate the field operations. There is an interchange of personnel between Washington and the field to insure good coordination.

The food and drug inspector, like his colleagues in the laboratory, is a college graduate with a degree in biological or physical science, pharmacy, or food technology. He must be an alert, resourceful individual who can work alone or as a member of a team. He is naturally inquisitive and must be able to accurately report his observations, both orally and in writing. He may be a chemist who has a desire to learn about modern food processing; a pharmacist who is interested in seeing the manufacturing of drugs and cosmetics. He may be a pre-med graduate who changed his mind; a food technologist who prefers to evaluate manufacturing and quality control to supervising food processing. In any event, he becomes

a better informed American by acquiring first-hand knowledge of manufacturing and distribution in our free economy.

"Administrative scientists" are usually developed from the ranks of laboratory and inspector personnel. The present Commissioner of Foods and Drugs started his career as a food and drug inspector. His deputy commissioner has been food and drug chemist, food and drug inspector, administrative officer, and lawyer. Previous commissioners have come from both chemist and inspector backgrounds.

The field scientists do not have the opportunity for leisurely research, but are constantly analysing foods, drugs and cosmetics suspected of being adulterated or misbranded. They frequently engage in "applied research" under the extreme pressure of determining promptly the composition of an article involved in a death or injury or suspected of being contaminated, adulterated, or misrepresented.

District directors and their food and drug officers are about equally divided between former laboratory scientists and former food and drug inspectors.

Among the other chores done by administrative scientists in the field or in Washington are:

- (1) Reviewing scientific evidence submitted by a manufacturer as to the safety of a new drug;
- (2) Reviewing laboratory analyses to determine the safety of batches of antibiotics;

(3) Working with committees on revision of the *United States Pharmacopoeia* and the *National Formulary*;

(4) Reviewing proposed manufacturing standards for foods and,

(5) Tolerances for pesticide chemicals used on foods;

(6) Evaluating data from the field on the inspection of manufacturing plants;

(7) Studying inspectional problems and developing techniques to solve them;

(8) Representing the FDA at scientific and professional meetings.

In order to emphasize the variety of scientific work, let us review the titles of articles appearing in recent editions of a scientific "house organ" which publishes reports and comments from both Washington and the field. Some of the titles are:

Microbiological Detection of Fungicides on Grain

Analyses of Barbiturate Tablets

Calculation of the Best Straight Line Field Test for Nitrates in Fish

Qualitative Field Test for Nitrates in Fish

Paper Chromatography of Sodium Salts of Fatty Acids

Analysis of Beach Plums

Interference of Hydrogen Sulfide in Chlorine Tests

"Semantic Malfunctioning"—an article by a training specialist to encourage fewer "misunderstandable" reports.

Antioxidants in Dried Whole Milk and Chewing Gum

Housefly Bioassay for Pesticides

Studies on the Howard Mold Count Method for 2,4D on Whole Lemons

Contamination of Milk and Cream with Waxes

Formaldehyde in Frozen Milk

Formaldehyde in Smoked Fish

Determination of 3-amino-1, 2, 4 triazole

Many FDA scientists are recognized and well known throughout the U. S. A. number have attained inter-

THE CHEMIST IN THE FDA

national recognition. Papers presented by these scientists have appeared in many scientific journals and technical periodicals. There is ample opportunity for worthy contributions to become recognized in the world of science.

Scientists in the field of public health, including scientists in the FDA, are now obtaining salaries and fringe benefits second to none in government, teaching, or industry. Vacations, sick leave, life insurance, retirement and health insurance benefits are excellent. The work is complex, exacting, challenging and satisfying. The work interest, the pay, the self satisfaction of rendering a useful

health service, the fringe benefits, and the opportunity for recognition in the professional world, make a career in the FDA most attractive.

Recent graduates holding B.Sc. degrees may be interested in Food and Drug Inspector or Food and Drug Chemist positions in the field. Washington laboratories are seeking chemists, biochemists, biologists, bacteriologists, pharmacologists and other scientists who hold Masters or Doctorate degrees or have considerable experience in research and work in methods development. There are many attractive career opportunities in the Food and Drug Administration and other public health agencies.

Among AIC Members on Tour:

Dr. M. J. Allen of Summit, N. J., is delivering a series of lectures in electrochemistry at the University of Liege, Belgium . . . Dr. Johan Bjorksten, new AIC president-elect, learned of his election to this office while on the high-seas bound for Europe . . . Mr. and Mrs. D. W. Young are attending the International Congress on Catalysis in Paris . . . Dr. and Mrs. Otto E. Lobstein of Beverly Hills, Calif., will attend the International Congress of Clinical Chemistry at Edinburgh, and Dr. Lobstein will speak at the Sorbonne and in Milano . . . Dr. Albert P. Sachs of New York, N. Y., is on a round-the-world trip for R. S. Aries

& Associates, Stamford, Conn. . . . Mr. and Mrs. Donald P. Germann of Binghamton, N. Y., are visiting Portugal . . . Dr. and Mrs. Joseph H. Dusenbury of Princeton, N. J., are visiting Europe . . . Dr. Henry B. Hass, former AIC president, will journey afoot along the John Muir Trail in the Sierras.

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New AIC Members

We welcome the following new AIC members, elected at the May 11, May 13, and June 21 meetings of the National Council:

FELLOWS

Aiola, Thomas W.
Soft Beverage analysis, National Nu-Grape Co., Atlanta, Ga.

Barwick, James G.
Senior Research Chemist, Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6, Ohio

Bauer, Dr. Albert W.
Research Chemist, "Freon" Products Laboratory, Chestnut Run Location, E. I. du Pont de Nemours & Co., Inc., Wilmington 5, Del.

Boehme, Dr. Werner R.
Senior Chemist, Ethicon, Inc., Somerville, N. J.

Bonnell, Dr. James M.
Director of Research, Tropicana Products, Inc., P.O. Box 338, Bradenton, Fla.

Brand, Edgar E.
Vice President, Director of Technical Sales, Director of Development, L. Sonnenborn Sons, Inc., 9 S. Clinton St., Chicago 6, Ill.

Burns, R. R.
Manager, Tennessee Copper Co., Copperhill, Tenn.

Busby, George W., Jr.
1280 Belhaven Road, San Marino, Calif.

Clark, Dr. Hadden
Project Leader (Senior Chemist), Chemicals Research Division, Esso Research & Engineering Co., Linden, N. J.

Clarke, Dr. John V., Jr.
Project Leader, Esso Research & Engineering Co., Linden, N. J.

Cobb, Stephen P., Jr.
Committee Executive, Research & Nuclear Energy Committees, NAM, 2 E. 48th St., New York 17, N. Y.

Coons, Dr. Kenneth W.
Professor and Head, Department of Chemical Engineering, University of Alabama, University, Ala.

Copelin, Harry B.
Technical Associate, E. I. du Pont de Nemours & Co., Niagara Falls, N. Y.

Eldridge, Dr. John W.
Associate Professor of Chemical Engineering, University of Virginia, Charlottesville, Va.

Elmer, Curtis
Research Group Leader, Monsanto Chemical Co., Springfield, Mass.

Flanders, Dr. Clifford A.
Chemical Coordinator in charge of Laboratories, Packaging & Processing, Fisher Scientific Co., Box 375, Fair Lawn, N. J.

Forman, Dr. Sylvan E.
Research Chemist, Food Machinery & Chemical Corp., P.O. Box 8, Princeton, N. J.

Frantz, Franklin D.
Industrial Organic Chemist, Sprague Electric Co., North Adams, Mass.

Fremed, Raymond F.
Associate Editor, Engineering Practices, Chemical Engineering, McGraw-Hill Publishing Co., 330 W. 42nd St., New York 36, N. Y.

Friedman, Dr. Harold B.
Chief, Research & Development, Zep Manufacturing Corp., Atlanta 1, Ga.

Goldfinger, Dr. George
Senior Research Associate, Naugatuck Chemical Div., U. S. Rubber Co., Naugatuck, Conn.

Greco, Edward C.
Senior Chemist, Supervisor Research Chemistry & Corrosion Section, Research Dept., United Gas Corp., Shreveport, La.

Gruen, Rudolph
Chemical Engineer in Charge of Development, Midland Labs., & Food Products Corp., 18th & Kansas Ave., Kansas City, Kansas

Gwathmey, Dr. Allan T.
Professor of Chemistry, University of Virginia, Charlottesville, Va.

Hakala, Dr. Neil
Assistant Director, Esso Research & Engineering Co., P.O. Box 51, Linden, N. J.

Hansen, Dr. Paul H.
Member Technical Staff, Bell Telephone Labs., Murray Hill, N. J.

Henley, Dr. Ernest J.
Associate Professor, Chemical Engineering, Stevens Institute of Technology, Hoboken, N. J.

NEW AIC MEMBERS

Hess, Miles E.
Vice President Technical Services, National NuGrape Co., Atlanta, Ga.

Horn, Howard J.
Owner & Technical Director, Hospital Products, Inc., Los Angeles, Calif.

Horney, Dr. Amos G.
Director of Chemical Sciences, Air Force Office of Scientific Research, Washington 25, D.C.

Hughes, Dr. Vincent L.
Research Chemist, Section Head, Esso Research & Engineering Co., Linden, N. J.

Johnson, Harry S., Jr.
State Chemist, Georgia Dept. of Agriculture. (Home address: 844 Derrytown Way, Decatur, Ga.)

Keeney, Dr. Frederick C.
Technical Director, Knowlton Brothers, Watertown, N. Y.

Konigsberg, Dr. Moses
Vice President, Commercial Development, Polymer Industries, Inc., Springfield, Connecticut

Krebs, Dr. Robert W.
Director of Chemicals Research Division, Esso Research & Engineering Co., Linden, N. J.

Krogh, Dr. Lester C.
Manager, R&D, Abrasives Lab., Minnesota Mining & Mfg. Co., 900 Bush Ave., St. Paul 6, Minn.

Kukin, Dr. Ira
Research Director, Sonneborn Chemical & Refining Corp., Belleville 9, N. J.

Lachmann, Dr. Alfred
Consultant, Food & Allied Industries, 1407 Remington Rd., Wynnewood, Pa.

Langer, Dr. Arthur W., Jr.
Research Associate, Central Basic Research Lab., Esso Research & Engineering Co., Linden, N. J.

Lichty, Dr. J. G.
Research Chemist, Section Head, Organic Chemicals, Goodyear Tire & Rubber Co., Akron, Ohio

Lieber, Dr. Eugene
Chairman, Department of Chemistry, Roosevelt University, 430 S. Michigan Ave., Chicago 5, Ill.

Locke, E. Otheman
Executive Director, Goodwin Joss Laboratories, Minneapolis 15, Minn.

McCulloch, Dr. W. J. G.
Section Head, Supervision of Plastic Sales Service, Enjay Laboratories, 1141 East Jersey St., Elizabeth, N. J.

McLaughlin, Henry E.
Supervisor of Research, Newport Industries, Box 911, Pensacola, Fla.

McMullen, Enos H.
Administrative Assistant to R&D., Vice President, S. C. Johnson & Son, Inc., 1525 Howe St., Racine, Wis.

Miles, Dr. C. B.
Technical Director, Chemical Research Division, Socony-Mobil Oil Co., Paulsboro, N. J.

Miller, Dr. Paul G.
Director of Research, Adolph's Ltd., 1800 W. Magnolia Blvd., Burbank, Calif.

Moreland, Dr. Ferrin B.
Associate Professor of Biochemistry, Baylor University College of Medicine, Houston 25, Texas

Mortensen, Dr. Frederick C.
Professor of Chemistry, Augsburg College, Minneapolis, Minn.

Mysels, Dr. Karol J.
Professor of Chemistry, University of Southern California, Los Angeles 7, Calif.

Owen, Allen Fulton
Scientific Advisor, Fiber Products Research Center, Inc., Beaver Falls, N. Y.

Passino, Dr. Herbert J.
Assistant to Vice President, Sales, The M. W. Kellogg Co., 711 Third Ave., New York 17, N. Y.

Pollard, Dr. Elisha F.
Head, Industrial Analysis Investigations, Southern Utilization Research & Development Div., USDA, 1100 Robert E. Lee Blvd., New Orleans 19, La.

Potts, Dr. James E.
Group Leader, Plastics Research, Union Carbide Corp., Bound Brook, N. J.

Puterbaugh, Dr. Milton P.
Professor of Chemistry, Ashland College, Science Division, Ashland, Ohio

Reason, E. D.
Vice President and General Manager, S. O. Barnes & Son, Gardena, Calif.

Rehder, Dr. James T.
Professor of Chemistry, Head of Department, Northwest Institute, 3408 East Lake St., Minneapolis, Minn.

Rigas, Dr. Demetrios A.

Associate Professor of Experimental Medicine (Research & Teaching) University of Oregon Medical School, 3181 S.W. Sam Jackson Park Rd., Portland 1, Ore.

Robertson, Dr. Campbell

Manager, Niagara Falls Research Laboratory, Electrochemical Department, E. I. du Pont de Nemours & Co., Inc., Niagara Falls, N. Y.

Ross, Dr. Sidney D.

Research Associate, Sprague Electric Co., North Adams, Mass.

Rothenberg, Dr. Mortimer A.

Scientific Director, U. S. Army CmlC, Dugway Proving Ground, Dugway, Utah

Salomon, Dr. Lothar L.

University of Texas Medical Branch, Department of Biochemistry & Nutrition, Galveston, Texas

Sawyer, Charles H.

Factory Manager, Smith-Lee Co., Inc., Oneida, N. Y.

Schilz, Carl E.

Professor of Chemistry, South Dakota School of Mines & Technology, Rapid City, South Dakota

Scott, Thomas J.

Assistant Chief, Chemical Division, U. S. Tariff Commission, Washington 25, D.C.

Slabaugh, Dr. Wendell H.

Professor of Chemistry, Oregon State College, Corvallis, Ore.

Smith, Frank J.

Consulting Chemical Engineer, 38 Sargent Rd., Scarsdale, N. Y.

Sondern, Dr. Clarence W.

Pharmaceutical Consultant, Ironia Road, Mendham, N. J.

Trotter, William H.

Manager, Advertising & Promotion for Organic Chemical Division, American Cyanamid and Cyanamid International, Bound Brook, N. J.

Waddington, Dr. Guy

Director, Office of Critical Tables, National Academy of Sciences, National Research Council, Washington 25, D.C.

Wakeham, Dr. Helmut

Director of Research, Philip Morris Research Center, Richmond, Va.

Webb, G. Raymond

Commodity-Industry Analyst (inorganic), U. S. Tariff Commission, Washington 25, D.C.

Weybrew, Dr. Joseph A.

Research Professor, North Carolina State College, Raleigh, N. C.

Witt, Dr. Norman F.

Chairman, Department of Chemistry, University of Colorado, Boulder, Colo.

MEMBERS**Bates, Donald F.**

Shift Supervisor, Pilot Chemical Co. of Calif., 11756 Burke, Sante Fe Springs, California

Craven, Dr. William J.

Senior Chemist, Polymerization Research, W. R. Grace & Co., Polymer Chemicals Div., 225 Allwood Road, Clifton, N. J.

Crowe, John E.

Company Patent Work, E. I. du Pont de Nemours & Co., Inc., Niagara Falls, N. Y.

Force, Carlton G.

Development Chemist in charge of shoe product development, Latex Fiber Industries Inc., Beaver Falls, N. Y.

Garner, Dr. Robert H.

Assistant Professor of Chemistry, University of Alabama, University, Ala.

Kastner, George

Technical Advisory Group, Taconic Products Co., Inc., Box 1234, Millerton, N. Y.

Minckler, Dr. L. Sherwood, Jr.

Senior Chemist, Esso Research & Engineering Co., Linden, N. J.

Panneer, Isaac

Owner, Globe Testing Laboratories, 4127 Reisterstown Rd., Baltimore 15, Md.

Petro, Dr. Anthony J.

Research Chemist, Esso Research & Engineering Co., Linden, N. J.

Shaver, Thomas E.

Clinical Chemist, Mount Olive, N. C.

Taylor, Thomas D.

Physical Testing and Concrete Inspection, Southern Testing Lab., Birmingham, Ala.

Wenzel, Frederick J.

Director of Laboratories, Marshfield Clinic, Marshfield, Wis.

Williams, Edward D.

Vice President, A. W. Williams Inspection Co., P.O. Box 314, Mobile 3, Ala.

NEW AIC MEMBERS

Wilson, James S.

Plant Chemist, Nuodex Products Co., 1 Virginia St., Newark 12, N. J.

Wood, William A.

Propellant Research, Rohm & Haas, Huntsville, Alabama

Woodside, Dr. Daniel L.

Fellow - fundamental research in polyelectrolytes, Mellon Institute, 4400 Fifth Ave., Pittsburgh 13, Pa.

ASSOCIATES

Baldwin, Vanish H., Jr.

Junior Engineer on Tantalum Foil Capacitors, Sprague Electric Co., North Adams, Mass.

Coughlin, Edward J., III

Chemist, Sprague Electric Co., North Adams, Mass.

Kerby, Merle D., Jr.

Research Dept., Southern Chemical Cotton Co., Chattanooga, Tenn.

Lindberg, David S.

Medical Technologist (Biochemistry) Marshfield Clinic, Marshfield, Wis.

Parsons, Kenneth

Drewry Photocolor Co., 550 W. Colorado Blvd., Glendale, Calif.

REINSTATED AS FELLOWS

Brown, Dr. Alfred E.

Vice President, Director of Research, Harris Research Laboratories, Inc., Washington 11, D.C.

Firth, Frank E.

Engineering Promotion Manager, The Udyline Corp., Detroit 11, Mich.

Martin, William F.

Chemist, Alcohol & Tobacco Tax Lab., Internal Revenue Service, Washington 25, D.C.

RAISED FROM MEMBERS TO FELLOWS

Atlas, Vladimer

Technical Director, Chemical R & D., Warwick Laboratories, Inc., Brooklyn 9, N. Y.

Byers, Samuel T.

Supervisor, Chemical Section, Special Projects Branch, Central Research, Food Machinery & Chemical Corp., Buffalo 13, N. Y.

Clodi, Charles E.

Senior Technologist, Socony Mobil Oil Co., Inc., 150 E. 42nd St., New York 17, N. Y.

Gist, Dr. Lewis A., Jr.

Chairman, Department of Chemistry, Norfolk Division, Virginia State College, Norfolk, Va.

Nissley, William J.

Chemist, Eskimo Pie Corp., 306 E. Grace St., Richmond 28, Va.

Rosenblum, Frank M.

Section Head, Adhesive Research, Armour Alliance Industries, Alliance, Ohio

RAISED FROM

ASSOCIATE TO FELLOW

Garner, Dr. Albert Y.

Research Chemist, Plastics Div., Monsanto Chemical Co., Springfield, Mass.

RAISED FROM

ASSOCIATE TO MEMBER

Meeker, Dr. Thrygve R.

Member of Technical Staff, Bell Telephone Laboratories, Whippny, N. J.

ASSOCIATE

Not Listed in Supplement to Directory (March 1960 CHEMIST)

Leichtle, Irvin J.

Administrative assistant to executive vice president, Bjorksten Research Laboratories, Madison 1, Wisconsin

Henry C. Speel, F.A.I.C., has joined Universal Oil Products Co., Des Plaines, Ill., as a member of the chemical products development department with responsibility for market research activities.



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"Laboratory Control, Research & Development for the smaller American Business." 24-page booklet. Available from the Scientific Apparatus Makers Association, 20 North Wacker Drive, Chicago 6, Ill.

"Engineering and Scientific Manpower—Organized Efforts to Improve its Supply and Utilization." By Henry H. Armsby, U. S. Department of Health, Education & Welfare. Circular No. 610 (68 pp.) Query price. Order from Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C.

"Recruiting Scientists & Engineers for the U. S. Civil Service." Report of proceedings of the Conference on Scientific Manpower, Washington, D.C. April 28-29, 1959. (46 pp.) Price 35 cents. Superintendent of Documents, U. S. Gov. Ptg. Off., Washington 25, D.C.

"Engineering & Scientific Education — Foundation of National Science." Proceedings of Conference held Oct. 31-Nov. 2, 1957. Limited number of copies available from Engineering Manpower Commission, 29 W. 39th St., New York 18, N. Y.

"Sponsor Handbook." Listing of free or low cost science materials. \$1.00. Science Clubs of America, (an activity of Science Service), 1719 N St., N.W., Washington 6, D.C.

"Study on the Use of Special Teachers of Science & Mathematics in Grades 5 and 6." (Covers Cedar Rapids, Io., Lansing, Mich., Washington, D.C., and Woodford County, Ky.) Query American Association for the Advancement of Science, 1515 Massachusetts Ave., N.W., Washington 5, D.C.

"Studies in Teacher Education." (Covers Bucknell, Emory, Hunter, Oklahoma State, San Francisco State, Univ. Arizona, and Univ. Tennessee.) Query AAAS (See item above.)

"A Life Hazard . . . Inadequate Vents on Flammable Liquid Tanks." 12 pp. 25 cents. "Ammonium Nitrate—Behavior in Fires." 16 pp. 25 cents. National Fire Protection Association, 60 Batterymarch St., Boston 10, Mass.

"Film Guide on Chemicals, Chemistry and the Chemical Industry." 182 titles listed. Helpful to educators. Request from Manufacturing Chemists' Association, Inc., 1825 Connecticut Ave., N.W., Washington 9, D.C.

"Federal Funds for Science VII. The Federal Research & Development Budget, Fiscal years 1957, 1958, & 1959." National Science Foundation publication. Query Superintendent of Documents, U. S. Gov. Ptg. Off., Washington 25, D.C.

On Legislation

Sen. Kefauver (D-Tenn.), chairman of the Senate Antitrust Subcommittee, has introduced a bill (S. 3677) to provide for the licensing of persons engaged "in the propagation, manufacture or preparation of drugs dispensed only upon prescription." He said the bill would redefine the term "new drugs" so as to require that new drugs would not only have to be safe but efficacious.

—*NAM News, June 24, 1960*

The House of Representatives has approved H.R. 12049, in connection with the patent provisions of the Space Act of 1958. This Bill is not the answer to the patent question but it is a positive and significant step toward improvement of the situation. On this basis it warrants support—not as a solution but as a step forward from our present situation.

H.R. 12049 amends Section 305 of the 1958 Space Act by requiring NASA to include in its contracts such provisions governing the disposition of rights in resulting inventions as to protect the public interest and the equities of the contractor. It deems the reservation to the Government of world-wide, irrevocable, non-exclusive, non-transferable, royalty free, license rights as providing such protection of the public interest and equities of the contractor, unless other disposition is required by law or is determined by the Administrator to be required in the interest of the national security or the general welfare.

Another bill which is a constructive move in the right direction is the Curtis Bill, H.R. 4797, now before the 86th Congress. The Bill provides a method of

ON LEGISLATION

supporting research that will provide for more funds being directed into real research and less being bled off by handlers of the money prior to its being disposed with the research operation. The Bill would permit deduction from a firm's or individual's income tax of 90% of contributions to colleges and other non-profit organizations for basic scientific research; not more than 5% of the total tax could be deducted. Businesses doing basic research would be permitted to deduct 75% of the cost. A move of this type should improve the stability of basic research and encourage additional efforts in this area.

Opportunities

Doris Eager, M.A.I.C.

Positions Available

Associate Director, Research & Development. Prefer man with Ph.D., or advanced degree in chem. or chem. eng. Should be well grounded in organic chemistry, able to work on applied problems, and to assume responsibility for laboratory development of new ideas through commercial development. East Coast chemical company. \$12-\$16,000. Liberal employment benefits program. Box 81, THE CHEMIST.

Organic or Physical Organic Chemists (2) with 5 years' experience. Would consider M.S. degree but prefer Ph.D. Location Florida. Box 83, THE CHEMIST.

Assistant Plant Manager. Responsible for direction, planning, control & improvement of operating methods & procedures, control & reduction of product costs, & direction of plant engineering & maintenance. Graduate chemical engineer, strong manufacturing background in industrial chemicals, well versed in inorganic chemistry and general engineering principles. Location midwest. Salary around \$12,000. Box 85, THE CHEMIST.

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For Your Library

The Structure of Nucleic Acids and Their Role in Protein Synthesis

Biochemical Society Symposia 14. E. M. Crook, Editor. Cambridge University Press. 1957. 74 pp. \$5.75.

Nucleic acids affect growth and differentiation by being involved in specific protein synthesis. This symposium surveys such current knowledge as well as research on the chemical composition and structure of nucleic acids.

—Dr. Henry Tauber, F.A.I.C.

The Merck Index

Seventh Edition. Paul G. Stecher, Editor. Merck & Co., Rahway, N. J., 1960. xi — 1641. Price \$12.00.

This new edition is larger than any of the previous editions and it contains a great deal more information. Actually, it carries descriptions of nearly 10,000 individual substances with structural formulas for over 3,000. There is a special section which lists named organic reactions, describes and gives references to them. In addition, there are 300 pages of appendices containing tables of chromatographic adsorbents, food calories, the Russian alphabet, etc. It is very useful to have this information available at one's fingertips.

On the other hand, there are a few minor defects which should be recorded so that the editors may, when an Eighth Edition is under consideration, be advised of them. The first, and most important, is the separation from the main body of all synonyms so that anyone looking for a compound under another name than the one by which it is listed in the main body will be obliged first to look in the separate index for it. According to the publishers there are some 30,000 entries in the "Cross-Index of Names." Nevertheless, it would be preferable if these were dispersed through the main body of the text with the proper cross references. The nomenclature itself is not immune to criticism, particularly that of inorganic compounds. One finds "silicofluoride" listed when the accepted name is "fluosilicate"; and "sulfhydrate" used in place of "hydrosulfide."

For some dyestuffs the old Color Index numbers are given when the new Color Index has been available for two or three years.

Merely reckoning these defects vs. percentage of good and useful information the result is insignificant. *The Merck Index*, Seventh Edition, like its predecessors, is an enormously useful compendium which almost everyone should have within arm's reach.

—Karl M. Herstein, F.A.I.C.

Finding Employment in the Chemical Profession

Booklet. Published by the American Chemical Society, 1155 16th St., N.W., Washington, D.C., 1960. (Individual copies free to ACS Members).

A well written presentation, it fulfills the need of the average college student, who, in spite of the emphasis given to placement over the past few years, does not know the proper procedures to follow to determine the opportunities available or to find the job that he desires.

Further, this booklet provides suggestions, the most important of which is to furnish a complete resume regarding training and experience. This does two things. First, it provides the company with better information. Second, it permits more accurate screening of the applicants to better fit them into positions where they have the best opportunity to demonstrate their abilities, and it gives the company the opportunity of obtaining maximum benefit from the background of the new employee.

—Dr. W. E. Kuhn, F.A.I.C.

Of Mice, Men and Molecules

John H. Heller, Charles Scribner's Sons, N.Y. 1960. 176 pp. 5½" x 8½". \$3.95.

This stimulating book is "intended for the layman with no background in science," but its story of the experiences involved in the formation and operation of the New England Institute of Medical Research, which combines all disciplines in its approach to research, will be illuminating to scientists as well as to laymen. The difficulty of obtaining support for purely basic research and the reasons why it should be supported are clearly set forth. Mice, men and molecules are mentioned in the title, but sharks and electric

eels also provide exciting incidents in the book.

This quote is timely:

"Then I turned to the Senators and said: 'Do you think for one moment that your constituents would fail to vote for you because you had supported basic research? As a matter of fact . . . don't you think that this might be a useful plank to have in your platform?'

"A senator replied, 'Humph, Doctor, it is obvious to see you never ran for elective office!'"

Dr. Vannevar Bush, in his introduction to this lively story, says,

"This book opens before the layman some of the exciting vistas of basic biological research. If books such as this were multiplied, and widely read, we might then make more sense in the ways in which we direct our national research efforts."

—V. F. K.

Chemical Process Principles

Parts I and II. By Olaf A. Hougen, Kenneth M. Watson, Roland A. Ragatz. John Wiley & Sons, Inc. 1980 pp. 6½" x 9½". Price: Part I \$8.50. Part II \$9.75.

In these books physical chemical processes are carried beyond the usual stages of analyses with voluminous data and illustrative examples. They contain much original matter such as Flow Analysis (including ram jet developments) compressibilities, distillation, equilibrium, etc. of wide scope. Both volumes are valuable to the researcher.

—Dr. John A. Steffens, F.A.I.C.

Metals and Enzyme Activity

Biochemical Society Symposia: Number 15. E. M. Crook, Editor. The Cambridge University Press, London, 1958. 102 pp. 6½" x 10". \$3.75.

Discussed are the metal-ligand bond in complex compounds; Enzyme-metal-substrate complexes as coordination compounds; Metal-peptide complexes and proteolytic activity; Heavy metals in biologic systems; Metals in biologic oxidations; Non-specific activations; catalytic hemoproteins. This volume should appeal to chemists interested in biologic catalysis.

—Dr. Henry Tauber, F.A.I.C.

FOR YOUR LIBRARY

Chemical Books Abroad

By DR. RUDOLPH SEIDEN, F.A.I.C.

S. Hirzel Verlag, Stuttgart: *Lehrbuch der analytischen und präparativen anorganischen Chemie*, by G. Jander and H. Wendt. 3rd. ed.; 441 pp.; DM 22. — A complete revision of this well-known textbook. It describes the modern theories of chemistry, laboratory procedures, qualitative macro- and a half-micro-analytical methods and the preparation of elements and inorganic compounds.

Verlag Technik, Berlin: *Synthesen organischer Verbindungen, Vol. I*, by P. A. Bobrow; 1959; 160 pp.; DM 17. — This translation allows us to glance into Russia's chemical research; it brings methods for the synthesis of 60 organic compounds, from $\text{C}_6\text{H}_6\text{O}$ to $\text{C}_6\text{H}_5\text{F}\cdot\text{Pb}$ and $\text{C}_6\text{H}_5\text{O}_2$. For each compound, properties and Russian literature references are given (cross-referenced to *Chemical Abstracts* and/or *Chemisches Zentralblatt*).

Dr. Alfred Huethig Verlag, Heidelberg: *Brandlehre und chemischer Brandschutz*, by L. Scheichl; 2nd ed., 448 pp. Covers chemistry and physics of fire and chemical fire fighting. • *Internationaler Kodex der aetherischen Öle, Suppl. I*, by A. Mueller; 1959; 208 pp.; DM 24. — Adds descriptions of botanicals and listings of manufacturers to the 3rd ed. of the "International Compendium of Essential Oils," with an English-French-German dictionary.

Carl Hanser Verlag, Munich: *Kunststofftechnisches Wörterbuch II*, by A. M. Wittfoht; 2nd. ed.; 587 pp.; DM 58. — An illustrated German-English dictionary of plastic-technical terms. • *Die Kunststoffe*, by G. Schulz; 1959; 536 pp. (120 ill.); DM 49. — Surveys the chemistry and technology of plastics.

Walter de Gruyter & Co., Berlin: *Lehrbuch der physiologischen Chemie*, by F. Leuthardt; 14th ed.; 933 pp.; DM 42. — A renowned college textbook of physiological chemistry.

Birkhäuser Verlag, Basel: *Fortschritte der Arzneimittelforschung, Vol. I*, by E. Jucker. 1959, 607 pp.; sFr 68—"Progress in Drug Research" is a new annual which tries to close the gap between periodicals and handbooks. It brings extensive review articles on specific, actual disease

problems, chiefly from the viewpoints of leading research chemists, pharmacologists, and physiologists. Eight authors supplied for the introductory volume articles dealing with ion exchange; cholesterol in atherosclerosis (in English); anthelmintics; placebo problem; stereochemical factors in biological activity (in English); and the newer drugs. I would like to suggest to the editor and publisher that they add to the many German-language articles summaries in English and French —this would be most helpful to researchers in all parts of the world.

FAO, Rome (Sales agent: Columbia University Press, New York): *Efficient Use of Fertilizers*, by V. Ignatief and H. J. Page. 2nd ed., 376 pp. (43 ill., 20 tables); paperbound \$4 — More than a hundred experts from all parts of the world contributed their knowledge to this UN publication; its 11 chapters deal with such subjects as plant nutrients, organic manures and fertilizers, factors affecting them, their application, their use in various countries, nutrient needs of various crops, and economic aspects. With 37 pp. literature references.

Arthur H. Thomas Co., Philadelphia, Pa., announces that Dr. Elden D. Haller has been appointed sales manager. Byron L. Roye is now field sales manager and Duncan E. King is regional sales manager.

The Alabama AIC Chapter, the North Alabama Section, A.C.S., and the Huntsville Center of the University of Alabama, are sponsoring a Special Lecture Series in Polymer Chemistry, being given by Dr. George B. Butler of the University of Florida, at Huntsville, Ala.

Dr. Milton P. Puterbaugh, F.A.I.C., is now director of science of the newly created Science Division at Ashland College, Ashland, Ohio.

Communications

On "The Letter of Recommendation"

To the Editor:

My warmest congratulations to THE CHEMIST, to its Editor and to the Authors of the editorial, "The Letter of Recommendation" (May 1960 CHEMIST). This is the kind of thing that the INSTITUTE is uniquely capable of doing. Because its Fellows are true professionals of mature years and broad experience, with a warm human interest in all of their fellow chemists they have recognized an evil situation of unknown frequency of occurrence. They have pointed out clearly and emphatically its harmful nature, and not content with this, they have offered very practical and probably completely effective measures to deal with it.

—Karl M. Herstein, F.A.I.C.
New York, N. Y.

Speakers on Food Subjects Wanted

To the Secretary:

Could you help me with information about individuals or groups amongst the membership of the AIC with special knowledge of food production? President Eisenhower's "Food For Peace" program and the U.N. Food and Agriculture Organization's "Freedom From Hunger" campaign for 1960-65 will focus attention in the coming months on man's primary need.

. . . I would be very grateful for

the names, addresses and positions of such persons or organizations and an indication of the manner in which they would like to deal with any of the many problems raised. Perhaps this could best be done by giving the phrasing of the topics dealing with some phase of the food and agriculture problem most agreeable to the person concerned. We would recommend that program chairmen from all manner of organizations all over the country would send invitations directly to the speaker so that he might decide of the suitability of the given date and place.

I hope that you can be of assistance in nominating speakers or sources of speakers for participation in this educational activity.

—Frances J. Pratt

*Director, Speakers Bureau
Foreign Policy Association
345 East 46th St., New York 17, N. Y.*

Employment Services

To the Editor:

My crowded program has delayed my response to the article (p. 63, Feb. 1960 CHEMIST) on "Employment Agency Services." I am of the opinion that Mr. J. C. Shediack, Jr., did not clearly understand the salient issue of my presentation. It is readily appreciated that there are a few employment agencies in the New York and Chicago areas who have chemists directing their efforts in a suitable and fitting manner toward the employment of chemists, and which pro-

cedure I can accept.

However, in my article I directed my remarks toward employment agencies in general and more specifically to those which assign a girl to a telephone, who is totally ignorant of the chemical industry, the types of enterprises in which the applicant would best qualify—all which is a far call from the constructive advice and counsellor service such an applicant might secure from a chairman of an Employment Committee of the AIC or the ACS.

My contentions are still unchanged. A chemist practicing in a professional capacity definitely lowers his status as soon as he inducts the services of an employment agency which specializes in unskilled or semi-skilled tradesmen . . . While I find no serious objection to the employing of a second party to act as an emissary, as other professionals do . . . this is a far call from a chemist going to an ordinary employment agency and being represented by a telephone girl who is totally ignorant of chemical industry.

It should still be a primary objective of the AIC to form a special committee on the employment of chemists, and its role should take it deep into all phases of the matter. It would begin with the drafting and recommendation of proper procedures to be conveyed to undergraduates about to enter the profession, such as the demeanor of approach; how to present themselves in a manner fit-

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ting to one entering a profession; the procedure of how to go about selection, and where to secure data and listings about chemical enterprises; when to use the follow-up letter, and other relevant tactics. Such procedures could be formulated by our parent society and sent to the chairmen of the Chapters to be placed in the hands of the chairmen of the Employment Committees.

There is hardly any phase of activity closer to the hearts of many of our members than that of their livelihood and how to better it. Such constructive efforts on the part of the AIC would certainly endear it to both many of its present members and

to potential members . . .

In any event, it would appear to be the task of the professional society to act as the "clearing house" between the chemist and chemical industry . . . Further, the society can do more—it can raise our professional status, the AIC primary objective and function. No activity could accomplish more toward this objective. All of these concepts are old. They are a normal function of the medical, legal, ministerial, teaching, and architect professions, as they should be.

—Harold A. Levey, Hon. AIC
New Orleans 18, La.

Suggestion to Central Planning Committee

(This anonymous note appeared in a reservation envelope for the 37th Annual Meeting.)

Gentlemen of the
Meeting Committee:

You would get much better response if you would have your (Annual) meetings Friday, Saturday and Sunday. We have to make a living on week days, or are you all pensioned . . . Arrange it so that one can use the weekend and give a little consideration to the employer, too!

—From a member who would drive 225 miles on a weekend (550 round trip). No plane or railroad connection here.

List of Suppliers of Chemicals Needed

To the AIC:

It would be appreciated if you could help us in supplying sources in

the United States for chemicals which are being used in drilling operations and refining.

—A. A. Rowlands, Comptroller
Duncan Supply Company Ltd.
5920 103rd St., Edmonton, Alberta,
Canada

Dr. Foster D. Snell, Hon. AIC, president of Foster D. Snell, Inc., New York 11, N. Y., announces the acquisition of Sperling Laboratories of Arlington, Va. C. S. Kimball, F.A.I.C., vice president of Foster D. Snell, Inc., said "the Sperling organization has rendered excellent services . . . in the pharmacological field. We see this new merger as complementing and supplementing our existing services."

J. Robert Bonnar, F.A.I.C., director of marketing of the Dyestuff & Chemical Division, General Aniline & Film Corp., New York, N. Y., was honored by his business associates April 15, at a luncheon to celebrate his 25th anniversary with the company.

Albert Parsons Sachs, F.A.I.C., consultant, New York, N. Y., served as moderator of the panel, "Consultants as Technical Witnesses in Court," held by the Association of Consulting Chemists and Chemical Engineers, Inc., New York 17, N. Y., on May 3.

William A. Smith, F.A.I.C., has moved to Auke Bay, Alaska, from New Wilmington, Pa.

Jesse H. Starkman, F.A.I.C., of Gillette Safety Razor Co., Boston, Mass., has been elected the first chairman of the newly-organized New England Chapter of the Society of Cosmetic Chemists.

Michael H. Baker, F.A.I.C., president of the M. H. Baker Co., Minneapolis 1, Minn., is currently chairman of the Twin Cities Chapter of The American Institute of Chemical Engineers and chairmanc-elect of the Minnesota Section of the ACS.

Milton O. Schur, F.A.I.C., has been named vice president for research of the Packaging Division of Olin Mathieson Chemical Corp., at Pisgah Forest, N. C. He was formerly director of research and development for the division's Ecusta Paper operation.

Dr. Roy P. Whitney, F.A.I.C., dean and vice president, The Institute of Paper Chemistry, Appleton, Wis., was moderator of the international panel on "Progress in Pulp Bleaching" at the TAPPI Pulp Bleaching Conference, Chicago, June 14-16.

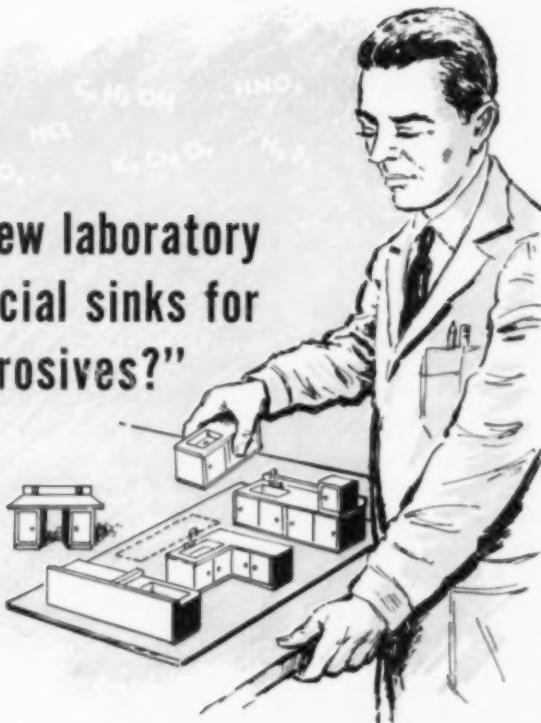
William R. Willets, F.A.I.C., assistant manager, Technical Service Laboratories, Titanium Pigment Corporation, 99 Hudson St., New York 13, N. Y., has been elected to the Board of Directors of the American Society for Testing Materials.

Dr. Otto E. Lobstein, F.A.I.C., Chem-Tech Laboratories, Beverly Hills, Calif., and Dr. Victor H. Baptist of Don Baxter Laboratories, Glendale, Calif., have been promoted to visiting research professors in the Department of Chemistry, University of Redlands, Redlands, Calif. Both are currently on the Professional Relations and Status Committee of the ACS Southern California Section. Dr. Lobstein has just been elected treasurer of the Western AIC Chapter.

Dr. Lewis R. Fibel, F.A.I.C., dean of students at the New York Community College; **Karl M. Herstein**, F.A.I.C., president of Herstein Laboratories, Inc., and **Dr. Nathan Weiner**, F.A.I.C., director of laboratories at Endo Laboratories, Inc., are among the members of the Chemistry Curriculum Advisory Committee of the New York section, A.C.S. This committee is seeking drastic revision of the chemistry teaching program in the high schools of New York City. The study of the city's chemistry teaching program was initiated by **Dr. Samuel Schenberg**, F.A.I.C., director of science of the schools.

Dr. Emil Ott, F.A.I.C., recent AIC president, has resigned as vice president for research and development, Chemical Divisions, Food Machinery & Chemical Corp. He will continue as part-time consultant for the company and will also devote himself to academic activities.

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